

An Experiential Analysis of Environmental Entrepreneurship

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EXECUTIVE SUMMARY

The prevailing definition for environmental entrepreneurship comes from a 2007 study that synthesizes economic and entrepreneurship literature: “the process of discovering, evaluating, and exploiting economic opportunities that are present in environmentally relevant market failures.”¹ This definition provides a lens through which the environmental entrepreneur’s activities can be defined, evaluated, and differentiated.

The entrepreneurial process is by no means a formulaic process, however. It is necessarily iterative and is characterized by time and financial limitations; one sketches a business strategy and then executes on that strategy. If and when something does not work, one adjusts accordingly and hopefully before money runs out or a competitor garners market share.

My three years of startup experience at Duke reflect the “art of the start,” in the words of Guy Kawasaki, much more than the science of entrepreneurship. Here are 10 key insights that I developed through the process:

Insight 1 – Follow Your Passion

Whatever business you choose to pursue, it must be something about which you are deeply passionate because you may spend the next five to 10 years of your life working tirelessly on it.

Insight 2 – Master Your Domain

Choose a space and master it. Once you understand it intellectually and experientially, you are in a stronger position to cultivate new insights that address old problems.

Insight 3 – Open the Hood

There are ventures where sharing information may not be wise in order to protect a patentable idea. But, by and large, there is far more benefit produced in sharing your ideas than in coveting them.

Insight 4 – Transparency is Essential

Social and environmental entrepreneurship demands a higher level of transparency than the status quo. That is, if your goal is to change the world and you have a great idea for how to do it, don’t hoard it. Find ways to increase the size of the pie, not just the slice with your name on it.

Insight 5 – Work Full-time

¹ Dean, Thomas J. and Jeffery S. McMullen. “Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action.” *Journal of Business Venturing* 22 (2007) 50-76.

Starting a new business represents an unbelievable amount of work, which if someone told you on the front end how much time and resource it would take you probably wouldn't do it. Similarly, progress can be diluted with distractions; working full-time on an idea is a luxury, but success may depend on it.

Insight 6 – Be Brutally Persistent

You will face rejections and naysayers all along the way. Extract whatever value you can from their input and improve your case. You don't have to please everyone, just enough people to pay you more than you're spending.

Insight 7 – Focus on the Milestones

Accept that you will be down on yourself at times and focus your emotion and energy on the next crest, the next milestone. Looking back on concrete successes will motivate you to reach the next one.

Insight 8 – Be Prepared to Pivot

There may come a time when you have to face the music and move on. This is a difficult decision emotionally, but also intellectually. Discerning the difference between persistence and foolishness may mean the difference between success and failure.

Insight 9 – Find the Right Partner

Very few people can go it alone for long, but choosing a partner is a delicate process. You want someone with complementary skills and shared values, and you want to develop a track record together to add credibility with investors.

Insight 10 – Timing and Luck Matter as Much as Persistence

Innovation is all about anticipating solutions to problems, but market dynamics have to be right in order for a new venture to be accepted. Sometimes investor or consumer psychology is lagging, so you have to be patient and work even harder.

What follows is a detailed accounting of my experience, lessons learned, and a business case on Blackdirt, my recent pivot to a farmer-farmer lending platform for small farmers.

PART I - Theoretical

Environmental Entrepreneurship in the Literature

Environmental entrepreneurship has not received much attention in the academic literature. In fact, the first study that expressly explored the question of “What is environmental entrepreneurship?” was published in 2007 by Dean and McMullen. By synthesizing approaches in the literature on environmental economics and conventional entrepreneurship, they derived the following definition: “the process of discovering, evaluating, and exploiting economic opportunities that are present in environmentally relevant market failures.”² More specifically, they identified five types of environmental entrepreneurship associated with the five forms of market failures identified in traditional economic theory:

1. *Coasian environmental entrepreneurs*: “reduce environmental degradation and capture economic value by developing excludability for public environmental resources.”
2. *Institutional environmental entrepreneurs*: “reduce environmental degradation and capture economic value by reducing transaction costs that are associated with environmentally relevant externalities.”
3. *Market appropriating environmental entrepreneurs*: “reduce environmental degradation and capture economic value by overcoming the market power of incumbent firms.”
4. *Political environmental entrepreneurs*: “reduce environmental degradation and capture economic value by altering (through political involvement) the structure of government subsidies, taxes, and other incentives.”
5. *Informational entrepreneurs*: “reduce environmental degradation and capture economic value by discovering methods of production which reduce environmental degradation or by marketing environmentally superior products to underserved environmental market niches” (producer-focused); and “by informing customers regarding the environmental attributes of products or services” (customer-focused).³

This set of definitions and the economic and entrepreneurship theory that underpin them provide a helpful lens through which the environmental entrepreneur’s activities can be described, evaluated, and differentiated from other forms of entrepreneurship.

² Dean, Thomas J. and Jeffery S. McMullen. “Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action.” *Journal of Business Venturing* 22 (2007) 50-76.

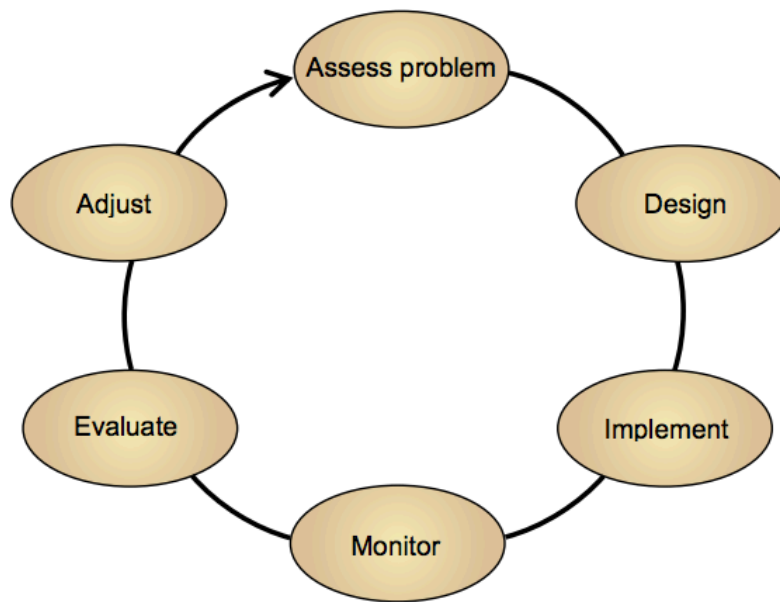
³ *Ibid.*

Applied Environmental Entrepreneurship Theory

As noted above, the academic literature on environmental entrepreneurship is extremely thin and reflects the youth of entrepreneurship, more broadly, as the subject of management science. There is, however, a massive popular literature on the topic of entrepreneurship and a great many published books on the intersection of business and the environment. One of the most widely read books on entrepreneurship in recent times is Eric Ries' *The Lean Startup*, which is an autobiography of his entrepreneurial journey. Ries documents the process he went through in launching a tech-based startup that ultimately sold for a significant amount of money, turning him and his investors into multimillionaires. What is most striking to me, however, about Ries' story is not his struggle and success, but rather the process he developed to achieve that success. This process would eventually come to be known as the "lean startup process," an approach to launching a business that borrows heavily from the lean manufacturing paradigm developed primarily by Toyota in the late 20th century.

The lean startup process is an approach to problem solving that can be distilled into an iterative three-step process: "build-measure-learn." Ries argues this approach is fundamentally aligned with the scientific method since it prescribes developing and testing a business hypothesis in order to validate precisely what is or is not driving value. In reality, there are dozens or even hundreds of hypotheses, or assumptions, built into any investment thesis. Ries argues that if a business executes on a strategy that is built on multiple assumptions, it is unable to tie results to any one of those underlying assumptions, making it difficult to determine how to manage for growth. Instead, businesses need to create specific experiments that test single assumptions and link them to the results of the experiments. This scientific process produces clear causality, which allows the manager to make more precise, efficient, and effective decisions.

What is fascinating is that Ries' build-measure-learn process has a close analogy in the field of environmental management. In recent decades, adaptive management has become a topic of focused discussion in academic and practitioner circles on how to effect and manage environmental change through time. The process has been defined differently by different institutions, but the core model is as follows:



Source: Department of Interior. <http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide/Chapter1.pdf>. Accessed April 18, 2013.

This cycle is strikingly similar in nature and design to Ries' three-step process. While adaptive management is most commonly associated with management of existing programs or environmental assets, and Ries' model is typically associated with startups, both approaches are equally valid at all stages of development and regardless of whether the subject of study is a conservation project or a for-profit tech.

PART II - Experiential

KEY INSIGHTS

I came to graduate school with the goal of launching a business. Like most naïve aspiring entrepreneurs, I had hoped to learn the 10 foolproof steps to launching a successful enterprise, but soon ascertained that such was the stuff of cheap newsstand rags. The process, it turned out, was much longer, more arduous, and less linear than expected. It was less a science than an art, and timing and luck would play a major role in degrees of success.

Following My Passion

With three years to explore entrepreneurship, I began by enrolling in New Ventures 1 (NV1), the first of three modules in the Program for Entrepreneurs at Duke's Fuqua School of Business. The goal of NV1 was to identify and evaluate a new business opportunity.

In fact, I had written my graduate school applications on my entrepreneurial aspirations and had even included summary paragraphs and logo marks for several of them in an addendum package to my application. Graduate school, I considered, would be an excellent place to test these ideas for their merit and potential. If there were a way to evaluate an idea quickly and move in one direction or another, that would be meaningful progress out of the state of uncertainty I lingered in prior to matriculating. I decided to use one of those ideas, Polymags, as the subject of NV1 and went about recruiting a classmate to join me in the process, which was a requirement for enrollment.

Case Study #1:



The Problem:

There are so many great options on the newsstand, but subscribing to all of one's favorites would be a waste of money because one doesn't have time to read them all anyway. So the content that readers end up getting is incomplete, and doesn't meet their needs efficiently.

What if readers could read what they want, when they want it, at a low cost?

The Solution:

Designed for time-constrained readers of all ages, Polymags is a flexible print subscription service that offers readers access to different magazines every month—all for the cost of a single subscription.

Readers queue up their monthly selections from a Web-based account or mobile device, just like with Netflix. And smart Web technology helps Polymags present relevant and timely suggestions to readers based on their Web activity and searches.

Unlike traditional subscription services, which limit readers to a single brand and make subscribers pay for more than they want or need, Polymags delivers the content readers want, in the format they want, when they want it, saving them time, money and hassle.

NV1 was stimulating because it provided the time and space to explore my ideas, which were constantly tested by my classmates and professors. As an avid magazine reader I was convinced Polymags was addressing a real problem, and the solution seemed intuitive and easy to implement. Despite my enthusiasm, however, I encountered many skeptics, who doubted that print media would still be relevant in 10 years. After six weeks of evaluating Polymags from a more rigorous standpoint through prospective user surveys and web research, I reached the following conclusion: it was a viable opportunity addressing a real problem, but that I would need to incorporate digital media into the service, and once I included digital, then the entire game changed. I would be up against content juggernauts like Yahoo, Google, and extremely successful startups like Flipboard.

My first key insight from this experience was truly powerful:

Insight 1 – Follow Your Passion

Whatever business you choose to pursue, it must be something about which you are deeply passionate because you may spend the next five to 10 years of your life working tirelessly on it.

I was not deeply passionate about magazines, media, or the digital space, so I decided to abandon Polymags. This was disappointing because it was a strong idea (validated by the fact, I would later learn, that *Time Magazine* had created a similar service for its print brands in 2008). It was also liberating to know I could lay that project to rest and begin looking for the “right one.”

Developing an Expertise

Related to the first insight was something I had heard from Paul Jerde, board advisor to the University of Colorado’s Deming Center for Entrepreneurship. In a brief meeting on CU’s campus in 2011 he emphasized the importance of mastering one’s domain. This stuck with me and began to resonate more fully with the arrival of my first key insight. Attaining mastery over anything is likely to happen faster and

more fully when the subject matter is of interest. But Jerde's suggestion was deeper than that; it referenced the somewhat obvious but easily overlooked notion that in order to innovate, one needs to understand the status quo intimately. A new insight into a space about which one knows very little is unlikely to be innovative to someone that has been in that space his whole life. In other words, someone is likely to have "already thought of that."

Insight 2 – Master Your Domain

Choose a space and master it. Once you understand it intellectually and experientially, you are in a stronger position to cultivate new insights that address old problems.

Tracing My Entrepreneurial Roots

My grandfather, a New York transplant to Florida, invested in citrus groves in the 1950s, and this became the center of his professional activities for the better part of three decades. His father-in-law, my great grandfather was a hotel magnate in New York City. He started and operated a chain of high-end boutique hotels under the family name, Manger Hotels, and the portfolio included some of the finest establishments on the East Coast, including the famous Hay-Adams hotel where incoming President Obama stayed awaiting his inauguration. My grandfather ran the hotels while his brother-in-law, the most senior of my grandmother's siblings, shipped off to fight in World War II. Upon his return, however, there was no longer room for my grandfather in the business, so he moved south to try his hand at agriculture investing.

My father worked in the groves as a kid and majored in agricultural business in college, but by the time he graduated, citrus in Florida was beginning to suffer from international trade. My grandfather liquidated most of the groves, but retained a few parcels, one of which was his personal estate, a larger citrus property with an early 1900s-era speakeasy that had been converted to a home. Thus, the groves became my play space as a child.

This exposure to agriculture as a child was augmented by the fact that we had several family friends, who ranched large cattle properties. These massive savanna landscapes would, too, become a cherished play space for me and would inspire a fascination for cattle, alligators, snakes, armadillos, and the like.

As I walked away from Polymags and spent the winter holiday reflecting on several possible trajectories, I considered these childhood experiences. I also found inspiration in the question, "Which experiences in my life have been the richest and most exciting?" The answer came easily. It was: working on a cattle ranch in Montana; doing research in the bush country of Kenya's Great Rift Valley; sailing a 153-foot brigantine vessel in the Sargasso Sea. The common thread in these experiences was an intimate interaction with the natural world.

From that point on, I decided to push deeper into the sustainable agriculture space. Only nine months earlier I had left my promising career in real estate investment to spend four months as a ranch-hand on a sweeping, semi-arid prairie ranch in Colorado. This was to serve as a buffer period between my seven-year career in real estate and the next three years I would spend in school. I lived in the bunkhouse, and labored six days a week, acquiring new skills and refining rusty ones I had learned as an intern on my uncle's ranch in Montana in previous years.

I spent a large portion of my time on the ranch in Colorado applying my background in real estate private equity to the ranching space, with the following lens of inquiry: how can private capital be used to address the challenges ranchers face? By the end of my four-month internship I walked away with a business plan for an investment fund that would use private investment dollars to help ranching families maintain a relationship to their properties through generational transfers, a process that many times results in loss of the family estate (due to the "death tax").

That business plan was one of several that I carried with me to business school. When I abandoned the Polymags idea, and with the help of my first two insights and some time for reflection, this was the first place to which I returned.

Breaking Through

During my first week of school I ran into David Nicola, a first-year MBA student at Fuqua. We encountered one another at a networking reception for Fuqua's Center for the Advancement of Social Entrepreneurship (CASE) and soon realized we shared a common background and interest in holistically managed cattle. This was a serendipitous encounter that, had I believed in fate, would have certainly been a signal of good omen. We hit it off and began swapping ideas over lunch that fall. When I returned from the winter break with a renewed sense of entrepreneurial direction I contacted Dave, and we spoke explicitly about teaming up on something in the sustainable agriculture space.

Our first breakthrough came when we applied to CASE's inaugural Seed Prize for \$10,000. We filed an application using an adaptation of the fund concept I originated on the ranch and waited expectantly. When the news came through that we had won the award I had a feeling of ecstasy and disbelief. We were on to something.

With the support of the CASE staff, we then mounted a campaign for the International Impact Investing Challenge, a competition hosted out of the Kellogg School of Business at Northwestern University. We were invited to pitch as finalists at the Federal Reserve Bank in San Francisco, where we presented before a panel of 15 impact investors and foundations. We were critiqued heavily, and this informed a third key insight, which would develop more fully in the coming months.

Insight 3 – Open the Hood

There are ventures where sharing information may not be wise in order to protect a patentable idea. But, by and large, there is far more benefit produced in sharing your ideas than in coveting them.

We were simultaneously energized and humbled by our experience in San Francisco, and we realized the silliness to hoarding our idea as if it were something any person sitting next to you would have an interest in stealing. Exposing our plan often resulted in people highlighting faulty logic, erroneous assumptions, and gross oversights. In other words, the benefit of sharing our “brilliance” was often a set of practical insights that would lead to a stronger thesis.

Testing Our Motivations

The notion of plainly sharing our innovative business ideas necessarily forced us to think about competitive advantages. It also forced us to test our value set. Dave and I had related a lot about goals and ambitions prior to making the decision to team up, and we shared an image of ourselves as social and environmental entrepreneurs, but we had never discussed in concrete terms what set of values would underpin any future enterprise. As things began to take shape, we asked ourselves hard questions like, “what is a social enterprise compelled to share, and how is that different from any other business?”

We concluded that if the purpose of a social and environmental enterprise were, in part, to improve the world, it would be disingenuous to hoard our innovations. The corollary viewpoint was that our success would come from increasing the size of the pie, not from usurping a greater share of a limited market.

Insight 4 – Transparency is Essential

Social and environmental entrepreneurship demands a higher level of transparency than the status quo. That is, if your goal is to change the world and you have a great idea for how to do it, don't hoard it. Find ways to increase the size of the pie, not just the slice with your name on it.

This insight was a very difficult one on a practical level, because there is a visceral, human tendency to protect something one views as personal property. We combatted this in real ways. For example, at one point we recruited five students from Duke University, North Carolina State University, and Meredith College to assist us in developing our business plan as a part of Fuqua's New Ventures 2 (NV2) class. The duration of the class was one semester long, so the participation of the other five students would coterminate with the semester, and there was no expectation that we could or would want to bring any of them on as partners or employees at a later date. Now, most businesses in this position would require such intern help to sign a nondisclosure agreement (NDA) and a non-compete agreement (NCA), preventing them from sharing any associated trade secrets.

We felt that an NDA/NCA was contrary to the spirit of our venture, so we worked with Duke's Community Enterprise Law Clinic to develop a "Community Engagement Letter." This letter was nothing more than a written agreement, whereby the founders and our volunteer researchers were expected to freely share their intelligence and ideas and any party would be free to take a part or the sum of those ideas beyond the engagement and use them freely without threat of lawsuit or penalty. In other words, "here's a great idea; run with it if you want to." Our only prohibition was against using the trademark we had established for the business.

Learning to Do

There is no formula, and there is no hard set of guidelines. Being an entrepreneur is rough and dirty work, and it amounts to "voting with your feet," in the words of Jesko von Windheim, Professor of the Practice of Environmental Innovation & Entrepreneurship at the Nicholas School of the Environment. I realized this early on in my NV1 classwork, and it became a more frustrating reality as time wore on. Even as I write today three years into this journey, I can think of only these key insights and a couple of useful frameworks that I would use the next time I try something like this. The secret, if you could call it such a thing, was brutal persistence: waking up every day and making progress, whatever the form; knocking on every door until the frowns turned to smiles and the "nos" turned to "yeses;" and maintaining a positive attitude and convincing yourself you will succeed—eventually.

What sounds like a labor turned out to be pure professional joy, however. Dave and I spent the summer of 2012 working full-time on our business, driving across the state to meet with agricultural producers, processors, distributors, restaurateurs, and consumers. We burned through our prize money fast with this kind of on-the-road research, so I took on some weekend consulting work for a private firm in the agricultural investment space. The more we learned, however, the more questions we began to ask, and the more consumed we became with the venture. Out of this experience came several related insights:

Insight 5 – Work Full-time

Starting a new business represents an unbelievable amount of work, which if someone told you on the front end how much time and resource it would take you probably wouldn't do it. Similarly, progress can be diluted with distractions; working full-time on an idea is a luxury, but success may depend on it.

Insight 6 – Be Brutally Persistent

You will face rejections and naysayers all along the way. Extract whatever value you can from their input and improve your case. You don't have to please everyone, just enough people to pay you more than you're spending.

Insight 7 – Focus on the Milestones

Accept that you will be down on yourself at times and focus your emotion and energy on the next crest, the next milestone. Looking back on concrete successes will motivate you to reach the next one.

By the end of the summer Dave and I had refined our business model substantially and had arrived at something we felt was a very strong investment thesis.

Case Study #2:

AgImpact Fund

The Problem: The current agricultural and financial system favors large, highly capitalized commodity operators. As a result, small- to medium-sized agriculture producers find the traditional banking system inflexible and unable to meet their ongoing working capital needs. In the context of already thin margins and volatile cash flows, small- to medium-sized farmers are forced to find off-farm income or sell to property developers or larger agriculture operators.

This trend represents a major shift away from the community-based farm and towards a food system that lacks diversity and security:

Loss & Degradation of Farmland: One acre of U.S. farmland is lost every minute. In the last 25 years, the U.S. has seen over 40 million acres of rural land converted to developed uses.

Consolidated Food System: Demographic and economic forces have resulted in the consolidation of land ownership and the industrialization of the agricultural value chain. This combination directly affects food safety and health, as well as the natural environment.

Need for New Farmers: In the last 100 years, the U.S. population has increased by 215 million, while the number of farmers supporting them has decreased by four million. For every farmer under 35 there are six over 65.

In order to reverse these trends, farmers must be presented with scalable alternatives that lead to a more resilient agricultural and financial system.

The Solution: AgImpact Fund offers an alternative to the current system by addressing farmers' key limitation – access to working capital – through

innovative financial partnerships.

AgImpact is structured as a real estate private equity vehicle whereby investor capital is pooled to purchase land, which is subsequently leased to farmers. Returns are generated through lease payments and land appreciation with additional return potential via percentage rent, ecosystem services, ecotourism, and alternative energy.

Three features set AgImpact apart from other investment vehicles in the agriculture space:

Feature 1: Partnering with Producers

AgImpact is financially and strategically aligned with agricultural producers. While many agriculture funds acquire property and replace the operator, AgImpact purchases property and proactively partners with the existing operator to drive financial, social, and ecological impact. The fund achieves this in three ways:

Sale-leaseback Recapitalizations

AgImpact purchases land from a landowner and leases it back to that individual, transferring a capital-intensive asset off of the operator's balance sheet.

Expansion Lease Financing

AgImpact acquires property and leases it to a nearby farmer, who is looking to expand operations.

Value-added Consulting

AgImpact layers onto each of these an ongoing operational and financial consulting service, drawing on internal resources, as well as its network of agricultural operators and institutions.

Feature 2: Focus on Organic & Transitional Land

AgImpact targets USDA certified organic land or land in transition that is operated by progressive farmers, who are open to non-conventional methods of production.

Feature 3: Regional Focus on Southeastern U.S.

AgImpact focuses on the Southeastern U.S., including North Carolina, Virginia, and West Virginia, with expansion opportunities into nearby states such as South Carolina and Georgia. This part of the country has a rich and unique agricultural tradition and economy with attractive investment potential.

Hitting Our Milestones

We had achieved a significant milestone in developing an investment thesis that would hold up much better to critique and, in fact, appeared to be very appealing to many professionals advising us. The next milestone was to identify and execute a pilot project to demonstrate the types of investments the fund would target and how they would operate.

We succeeded in identifying an Organic Valley dairy farmer, who was interested in selling us his land and leasing it back on a long-term basis. This sale-leaseback recapitalization would allow him to eliminate outstanding debts and reduce his monthly payment; (he would pay a lower lease fee to AgImpact Fund than he was paying in mortgage to the bank). Additionally, some of the proceeds would be used to invest in critical infrastructure like shelters for his animals in extreme weather, new fencing and livestock paths to improve his pasture management, and a new milking facility, all of which would increase his operating profits. Over the investment horizon, he would in theory be in a better financial position to purchase the land asset back from the fund, which would serve as the exit for investors.

Once we had viable project lined up, we hit the road again, this time seeking investment.

Learning to Pivot

After 10 months of attempting to raise between \$0.5 million and \$3.1 million for the pilot project, we came to a unwelcome realization: we were probably not going to be able to raise that kind of money. Our failure was not in the business model, per se, but it was more in overlooking the importance of track record when trying to raise this kind of money for these types of projects. As we met with accredited investors and advisors, we heard more and more stories of seasoned fund managers having a difficult time raising funds of the same scale that we were targeting (\$50 million). The notion that two young guys with significant financial and real estate experience but no direct fund management track record would be able to outperform our more seasoned peers in these activities was probably naïve.

Insight 8 – Be Prepared to Pivot

There may come a time when you have to face the music and move on. This is a difficult decision emotionally, but also intellectually. Discerning the difference between persistence and foolishness may mean the difference between success and failure.

As that realization set in, we contemplated a pivot. During the summer of 2012 we learned a lot about the agriculture space and came across several compelling problems in the value chain. One of the issues we were very concerned with was an alarming demographic statistic, which indicated a major oncoming shortage in farm labor.

As we tried to understand this demographic data and its causes, we determined there was a potential business in helping beginning farmers access new opportunities.

Case Study #3:



The Problem: The industrial agriculture system has resulted in limited opportunities for aspiring farmers. For every six American farmers over the age of 65, there is just one below 35. New farmers are unable to fill this gap because a system of challenges inhibits their success, including: high cost of land, high cost of equipment, lack of mentorship, and low access to markets.

Current support systems such as the USDA's Beginning Farmers and Ranchers loan program, technical assistance providers, and non-profit incubators fail to effectively address the suite of challenges faced by new organic farmers. Cultivating a new generation of farmers to replace seasoned operators requires an integrated, systems-based approach that addresses all challenges concurrently.

In addition to limited opportunities for new farmers, the industrial agriculture system has serious secondary consequences. As seasoned farmers retire in the next 10 years, thousands of farms will come out of production, increasing our dependence on the few farmers left standing. International agribusiness conglomerates will fill the gap, scooping up farms and consolidating operations to grow economies of scale. Suburban real estate developers will absorb much of the rest to capitalize on population growth trends. This succession of events will inevitably diminish the diversity and resilience of our food system and exacerbate environmental, social and economic problems.

Fortunately, these alarming trends have catalyzed sustainable, local and organic agriculture activities, a market that is growing at a rapid rate. In order to keep pace with expanding demand, however, the agricultural industry must cultivate a new generation of young farmers to increase production of fresh, healthful and local foods.

The Solution: VentureFarming™ is a for-profit incubator for beginning organic farmers. It directly addresses the four key challenges every

beginning farmer faces (land, equipment, mentorship, distribution) by co-locating farmers on a single, resource-rich property. Farmers spend a minimum of two years on the property acquiring the experience, confidence and credibility they need to succeed as a farmer entrepreneur once they move beyond the VentureFarm.

VentureFarming charges each farmer \$1,500 per acre per year for access to the land, equipment, and mentorship. The business also provides a market for the farmers, buying the produce and selling it under a single umbrella brand to consumers who work on large corporate campuses.

Walking Through the Valleys

By the time we fully embraced the pivot, it was the beginning of 2013, and Dave was set to graduate in May. He was starting to feel the pressure of the clock, so we worked tirelessly on VentureFarming to refine the business model and begin to interface with investors. We succeeded in another season of business plan competitions, as semi-finalists in the Walmart Better Living Business Plan Competition and the Duke Start-up Challenge. We also made it through the initial rounds of the Global Social Venture Challenge, but were eliminated in the first rounds of the Echoing Green competition. We gleaned helpful insights through these competitions, but no seed money to invest in the project. Unfortunately time ran out, and while I had secured school funding to work on the venture over the summer as I had the previous year, Dave and his wife were moving to New York to look for more stable opportunities. He landed with a boutique family office that invests in sustainable agriculture, but his capacity to continue work on VentureFarming was severely limited.

My summer goals included validating customer demand through a focus group, beginning to compile a list of interested farmers, and identifying a piece of land on which to construct the pilot project. I held the focus group and gleaned some useful information, but I had not anticipated how much time would actually be needed to extract full value from the participants, so many of my questions remained unanswered.

Finding land turned out to be much more difficult than I had anticipated. We limited ourselves by looking for land we could lease within a 30-mile radius of the Research Triangle, preferably as close as possible to the urban centers. Over the course of the summer I had several positive meetings with private landowners, non-profit organizations, and the Durham Public School System, which has an expansive land portfolio. But all of these eventuated in dead ends. Finally, I earned a lead after a pitch I made at a DukeGEN event in American Underground late in the summer. The land was owned by an established family of entrepreneurs that support local economic development and social enterprises. I toured the property with the land manager, and it appeared to meet all of my specifications.

Unfortunately, the wheels fell off after this meeting. School resumed, and my time became extremely limited with classwork and club leadership responsibilities. When I had time to follow up with the land manager, he was unavailable. Dave's works with the sustainable agriculture firm in New York was complementary in terms of learning value, but he was not able to contribute much to our progress. I had already learned, as noted above, to be brutally persistent and focus on the milestones. What I had lost sight of, by necessity of my other commitments, was the importance of focus and spending as much time as possible on my venture in order to realize progress. I felt like I hadn't accomplished anything over the summer, and this led to a new insight.

Insight 9 – Find the Right Partner

Very few people can go it alone for long, but choosing a partner is a delicate process. You want someone with complementary skills and shared values, and you want to develop a track record together to add credibility with investors.

I had chosen the right guy to partner with—this was not in question. But in his absence and with the mountain of other responsibilities, we realized our handicap. VentureFarming was a particularly complicated business model that was not the kind of thing I could advance in my pajamas in front of my computer in the wee hours of the morning. I needed to be meeting with people, spec'ing land, lining up partnerships, and I needed my teammate. But instead I was anchored to a classroom desk and busy organizing club activities.

My frustration grew, as I began to see my own graduation clock ticking. This amazing three-year experiment would soon be coming to a close, and I was set to fall short on my singular goal of launching a business while in school.

Throwing in the Towel

When I returned to campus in January of 2014, reality set in: we were not going to get funded before I graduated, so it was time to start searching for a job. I shifted focus and put both AgImpact Fund and VentureFarming on ice indefinitely. This was a blow to my confidence given the goals I had set for myself. Notwithstanding, I knew I had given these efforts more than most, and I had learned a whole lot along the way. Both ventures were still, in my mind, very viable and compelling, and all they needed was a little more time, effort, and focus.

I also realized that while my entrepreneurial experience and resume would be a non-starter for some employers, it was uniquely attractive to others. After nearly three years of pounding the pavement, I was exhausted and the thought of working for another organization and building my skill set and track record became more appealing. Moreover, I would still be able to make progress on my ventures during the nights and weekends, so all was not lost. I welcomed one final insight.

Insight 10 – Timing and Luck Matter as Much as Persistence

Innovation is all about anticipating solutions to problems, but market dynamics have to be right in order for a new venture to be accepted. Sometimes investor or consumer psychology is lagging, so you have to be patient and work even harder.

I remember my rancher uncle telling during the summer of 2011 when I had first conceived of the ranchland private equity model, that it was a strong idea, but people may not be ready for it. He may have been coddling my feelings, but in any case he was right: people weren't ready for it. In the last year, however, I have seen at least half a dozen similar business proposals floating around, which is at once validating and frustrating. They may face a similar outcome to what I experienced, or perhaps they have the right idea at the right time with the right stroke of luck.

Contemplating Failure

It was true that in one sense I had failed; I would not be writing my own paycheck upon graduation. But in another very real sense I had succeeded. I did, in fact, start a real business with the filing of a North Carolina limited liability corporation. Dave and I created AgImpact Capital LLC in July of 2013 for two reasons: 1) to test the relationship with the owner of the farm we had proposed as the pilot project for AgImpact Fund; and 2) to test a related business idea that there was an unmet need for working capital in the farming community. We teamed up with another small firm in town that was interested in the microlending space to write a \$10,000 interest-only, six-month operating loan to our pilot farmer. This experience and "skin in the game" would prove to add significant credibility to Dave and me in our meetings with investors and advisors.

More importantly it was the beginning of one final pivot. I had for the most part completed my classwork and had only this Masters Project between me and graduation. I wasn't ready to throw in the towel just yet, and with the extra bandwidth I decided to make one last attempt at entrepreneurship before diving back into the working world. My 11th insight was Blackdirt.

PART III – Business Case: Blackdirt

EXECUTIVE SUMMARY

Blackdirt™ provides farmers with a platform that facilitates peer-to-peer lending in a way that meets their needs more conveniently and effectively than conventional banking services.

Farmers have a difficult time matching income to expenses—that is the nature of farming. The banks used to understand this, but they've gotten too big and lost most institutional knowledge about agriculture. Even the farm credit system is clumsy and slow. When hay needs to be baled and seed needs to be sewn, there's no time to waste in the commercial lending office. Farmers need cash that is fast and easy, and they need a financial partner that understands their businesses. Blackdirt offers Farmer2Farmer™ lending (peer-to-peer lending) to meet those urgent, small cash needs.

Its competitive advantage is a unique underwriting process called FarmSourcing™, which taps into the deep intelligence latent in the farming community. No one knows farming as well as farmers, and most of them have a reliable sense for whether or not their neighbor is a good farmer and good for repaying a loan. Blackdirt leverages that knowledge to lower transaction costs, interest rates, and loan processing times, which makes for happier, more profitable farmers.

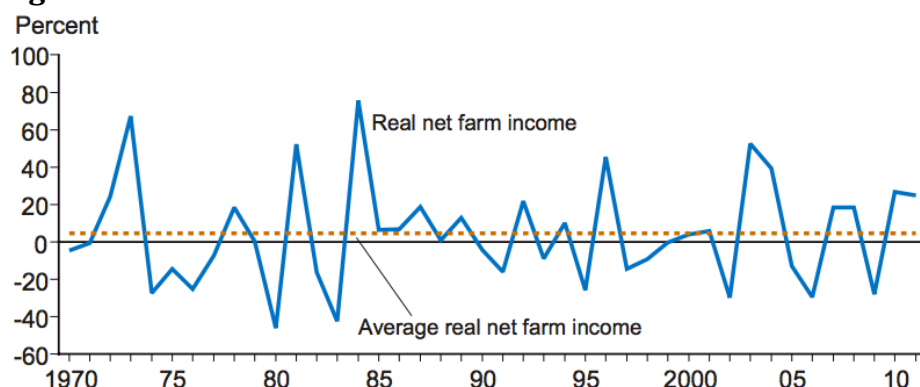
PROBLEM

Summary

The banking system is broken from the perspective of small and medium-sized farmers. They need more appropriate financial options that are fast and flexible.

Cash Flow Challenges

During the course of each growing season, the average farmer experiences challenges in matching the timing of income to expenses. The sale of livestock or crops usually follows investment by three to twelve months, while fixed costs and necessary capital expenditures occur on a regular basis. Farmer income has shown positive annual growth on average since 1970, as shown in Figure 1, but income is highly volatile as a result of exogenous variables like weather events and commodity markets.

Figure 1

A small bump can turn into a serious setback, significantly affecting already thin profit margins. Historically, farmers have been able to mediate these cash flow risks by relying on credit facilities offered by the banks. However, the conventional banking system is increasingly maladapted to the needs of small and medium-sized farmers.

COMPETITIVE LANDSCAPE

In theory, farmers have variety of options to choose from when selecting a source of credit: national banks, state banks, community banks, farm credit banks, credit unions, the Farm Service Agency, credit cards, and other potential sources. In reality, however, most farmers only have a few options based on their geographic location, track record, net worth, and other limiting variables. Also, the banking system has increasingly lost institutional knowledge on agriculture and how to underwrite it as a result of changing fiduciary interests and structural industry changes associated with deregulation and mergers and acquisitions.

Source of Credit	Limitations
National Banks	No agricultural experience, focused on large commercial loans, high paperwork burden, misaligned maturities
State Banks	Little agricultural experience, focused on large commercial loans, high paperwork burden, misaligned maturities
Community Banks	High paperwork burden, misaligned maturities
Credit Unions	High paperwork burden, misaligned maturities
Farm Credit System	High paperwork burden
Farm Service Agency	High paperwork burden
Credit Cards	High interest rates, misaligned maturities
Peer-to-peer	One-off deals, non-profit programs are not widely available or scaleable, lack of appropriate underwriting

Of these options, community banks (including the farm credit system) have historically served the farmer best because of their mission, omnipresence, and their approach to underwriting. Between 1980 and 2001, however, community banks lost significant market share (17%, or half of their asset and deposit base) to larger banks, as the latter expanded and consolidated, in some cases acquiring the community banks.

Bank Size ⁴	Assets
Small	< \$1 billion
Small-Mid	\$1 – 10 billion
Mid-Large	\$10 – 50 billion
Large	>\$50 billion

National and state banks and even some community banks have stringent underwriting requirements that often include credit history checks, audited financial statements, and financial *pro formas*. Some of this is motivated by federal legislation associated with improving transparency and documentation, and some of it is tied to the desire for standardization across large bank portfolios. In either case, the customer often absorbs the expense of this bureaucracy in the form of unnecessary and redundant paperwork and other hindrances.

Even if farmers are able to get past the paperwork, many still find it difficult to secure the small amounts of working capital they need, as banks view writing such loans as too expensive or outright unprofitable given their high operating costs. This often results in farmers cutting corners and damaging their credit as they try to make ends meet without the help of a financial institution.

SOLUTION & SERVICES

Blackdirt addresses the shortcomings of the conventional banking sector primarily by lowering transaction costs for the borrower, so loans are faster and more flexible. It achieves this through a unique Farmer2Farmer™ lending platform, which connects farmers more efficiently than they might on their own. This type of over-the-fence deal happened a lot in the good old days and still happens, but usually on a one-off, manual, and undocumented basis. Blackdirt makes it easier for farmers who need cash to find those who have cash, and vice-versa, through a proprietary online platform.

Farmer2Farmer lending takes advantage of the seasonality of farming. For example, the Christmas tree farmer makes all of this money in December and January and deposits it in the bank, earning a very low rate of interest before using some of those reserves to pay for the next season's inputs. Meanwhile, the strawberry farmer is purchasing seed and fertilizer in January and may be tight on cash. This represents a perfect opportunity for the Christmas tree farmer to make an impactful investment

⁴ Gilbert, R. Alton and David C. Wheelock. May/June 2013. *Federal Reserve Bank of St. Louis Review*. p205.

in his fellow farmer, while earning a higher rate of return at, say, 8% instead of the 0.5% he earns from the bank.

CUSTOMER

According to the USDA there are approximately 2 million farmers in the U.S., and 91% of farms are considered “small;” that is, they produce annual gross farm cash of less than \$250k. As noted above in the problem statement, the banking system is tailored for larger farmers that are well capitalized and collateralized (with land and equipment assets), leaving small farmers hanging out to dry.

In July of 2013, I made a \$10k operating loan to an organic dairy farmer for fertilizer and lime inputs for a milo (feed) crop. The loan was interest-only with a balloon payment at six months and a 10% interest rate. Notably, the farmer was willing to pay 2% more than the rate he thought he would be able to get at the local bank. This was essentially a convenience fee for access to the cash with lower underwriting requirements and faster distribution. This is anecdotal evidence of a deep need in the farming community for fast, flexible and small amounts of cash, which are not available through the conventional banking system.

TECHNOLOGY & INNOVATION

Blackdirt’s competitive strength lies in the convenience and speed with which it can facilitate the distribution of cash to farmers. Its loan processing speed is derived from two core competencies. The first is farming expertise. Blackdirt is composed of farmers and people who have studied agriculture extensively and are passionate about its importance. They understand its value chain and cyclicalities and can underwrite it better than conventional banks, which means Blackdirt can do it faster and typically at a lower rate. The real source of value, however, is in the proprietary underwriting process, called FarmSourcing.

FarmSourcing

First, the farmer creates an online profile and provides basic information on his business, including a narrative of his operation, a statement on use of funds, and important details like his tax EID and FSA farm registry number. The farmer is not required, however, to present a stack of financial documents, draft a business plan, or visit our office multiple times as conventional banks do, which saves him several valuable hours and lots of headache.

Second, Blackdirt performs basic underwriting checks to test the farmer’s ability to repay the loan, like reviewing credit scores, state debt registries, and public tax filings, all of which can be completed in less than an hour. Third, one of our underwriting specialists reviews the risk and economics of the farmer’s intended use of funds, which takes up to two hours.

Finally, we tap into the farming community to provide well-informed opinions on the likelihood of loan success and repayment, which completes the due diligence task. Farmsourcing decentralizes the underwriting process, leveraging existing

social networks in the farming community. No one knows the farming business better than farmers. Moreover, most farmers have a strong handle on whether their neighbors are good farmers and good business people (remember, there is a long history of farmer-to-farmer lending).

Blackdirt accesses this latent information network by setting up lending-pool cooperatives that are geographically based. A Blackdirt cooperative consists of approximately 100 farmers in a specified region (county or watershed) that have familiarity with regional agronomics. In order for one farmer to be eligible to receive a loan, he must earn between five and ten guarantees from other farmers in the cooperative. The guarantee serves as a stop-loss on 50% of the loan amount for the lender. More importantly, the guarantee serves as social pressure for the borrower-farmer to perform on the loan. For example, if Farmer A wanted a loan from Farmer B for \$5,000, he would need five other cooperative farmers to guarantee his loan to Farmer B. If Farmer A defaulted and was only able to pay back \$2,000 of the principal, his guarantors would be on the hook for \$2,500 and Farmer B would receive \$4,500, with a \$500 principal loss plus lost interest.

The social guarantee ensures that only the farmers that are credit worthy receive loans, and those loans are highly likely to be repaid. Blackdirt provides underwriting history using automated tools like credit checks, and these are supplemented by FarmSourced due diligence, which increases loan processing and distribution times.

This form of social accountability has been shown to be very effective in similar microfinance structures like Grameen Bank in Bangladesh and Comportamos Banco in Mexico.

MARKET OPPORTUNITY

Most farmers are “land-rich and cash-poor,” as evidenced by the fact that only 4% of their assets are financial; the balance consists of real estate, machinery, and inventories, which require cash maintenance. As a result, there is strong demand for debt services, with projected outstanding non-real estate farm sector debt at approximately \$130 billion in 2014. Additionally, debt-to-equity ratios are expected to fall to 11.8% in 2014, their lowest point since 1970, indicating strong debt capacity. Further, small and medium-sized farm businesses have about half (14%) of the debt repayment capacity utilization that large farms do, suggesting an underserved niche.

MANAGEMENT TEAM

Blackdirt is managed by Jack Beuttell and David Nicola, who have significant experience in finance, real estate, agriculture, and conservation.

Jack C. Beuttell / MBA, MEM

Jack spent seven years in marketing, finance, and sustainability for Hines, an international commercial real estate investment firm. His father and grandfather farmed citrus in Florida for 30 years, and his uncles farm Christmas trees and cattle

in North Carolina and Montana, respectively. His farm-related work includes time with Sieben Livestock Co., Ranchlands Group, International Farming Corporation, and The Conservation Trust for North Carolina. Jack received his BA from Vanderbilt University and will graduate with an MBA and Master of Environmental Management from Duke University in 2014.

David J. Nicola / MBA

David spent seven years as a portfolio manager at BlueMountain Capital Management and as an investment banking analyst at Citigroup. Most recently, he worked with Armonia LLC and Stone Barns Center for Food & Agriculture to explore new business models that support beginning farmer land access and ecological-based agriculture in New York State. David is an avid conservationist, who volunteered extensively with The Nature Conservancy, serving as a Young Professionals Board Member from 2005 to 2011. David received his BA in Natural Resources from Cornell University and his MBA from Duke University.

NEXT STEPS

The next step in the development of Blackdirt is to conduct a farmer survey (see appendix) to validate customer demand for this product. Based on those results, I would develop a prototype program where I would manually match farmers that have cash reserves and farmers that have cash needs. Based on those results, I would develop an automated beta website.

CONCLUSION

While the qualitative nature of the 10 key insights above are all valid and essential, perhaps the most important insight, however, is the one not listed—namely that the art of the start should be, in fact, more of a science. This is the argument made by entrepreneur Eric Ries, author of *The Lean Startup*, who advocates that founders should employ a rigorous build-measure-learn process that tests specific business hypotheses, empowering managers to act on causality and produce certifiable results. What I have realized in retrospect only, is that my process over three years did not include the necessary level of rigor in my experimentation, which resulted in wasted time, effort, and money.

In spite of that, I now stand at the edge of graduation with a compelling pivot from my previous ventures and a powerful new toolkit I can use to exploit that opportunity. First, Dean and McMullen's definition of environmental entrepreneurship through the lens of environmentally relevant market failures provides a screening tool to identify specific ways I can attack environmental problems as an entrepreneur. Second, the lean startup process and adaptive management approach provide powerful frameworks to identify and test key assumptions that will drive business value. And finally, I have a list of qualitative insights that will provide a basis on making essential decisions as I evaluate and grow my next business.

APPENDIX

Farmer Use Case Survey

1. In a given year, do you need external cash infusions (e.g., from a bank, credit union, credit card, etc.) for working capital?
2. What is the low end of external working cash you need in a given year? (do not include cash for real estate purchases)
3. What is the high end of working external cash you need in a given year? (do not include cash for real estate purchases)
4. What is the average of working external cash you need in a given year? (do not include cash for real estate purchases)
5. Where do you typically turn for these cash needs: 1) community bank; 2) credit union; 3) farm credit bank; 4) state bank; 5) national bank; 6) credit cards; 6) friends and family; 7) other (please specify) (choose all that apply)
6. Please indicate how satisfied you are with the following: your banking relationship in general, interest rate, maturity term, bank flexibility, willingness to refinance, personal touch, knowledge of agriculture. (Likert Scale: 1 not satisfied at all, 3 neutral, 5 very satisfied)
7. What is the highest spread you would be willing to pay in interest rate points above the going bank rate for the following: 1) not having to visit the bank (applying and qualifying for a loan entirely online); 2) not having to submit a *pro forma* business plan for your intended use of funds; 3) not having to submit audited financial statements; 4) not having to manually submit tax statements.
8. If using such a service required that you provide an anonymous borrower rating on the creditworthiness of your peer farmer, how willing would you be to do that? (In other words, in order to qualify for an online working capital loan, you would need to log on to the bank website and answer three simple questions like: 1) how likely is this person to repay a loan on time? 2) if you were ill for a year, would you feel comfortable with this person farming your land to make you money? 3) would you loan money to this person?)
9. Have you ever loaned money to another farmer? (Yes, No)
10. If yes, did you have more than a verbal contract (as in a written agreement)?
11. Would you ever loan money to another farmer again? (Yes, No)
12. If yes, why would you loan money to another farmer: 1) to help another farmer; 2) to make money; 3) to support the local economy. (choose all that apply)
13. Do you have Internet access in your household or office? (Yes, No)
14. Please rate your comfort level navigating the Internet: (Likert Scale: very low, low, neutral, high, very high)
15. How many institutions have you banked with for your agricultural business?